

CLAIMS

What is claimed is:

1. A valve trim assembly for a process control valve having a
5 valve body and a bonnet, the valve trim assembly comprising:
a valve plug adapted to move to one of a plurality of operational
positions with respect to the valve body, the valve plug including a plug bore;
a movable valve stem attached to the valve plug, the movable valve
stem including a stem bore therein, the stem bore adapted to substantially
10 align with the plug bore;
a locking member disposed in the stem bore and the plug bore; and
a retaining member attached to the bonnet that substantially surrounds
the locking member at all operational positions of the valve plug.
- 15 2. The valve trim assembly of claim 1, wherein the locking
member comprises a locking pin disposed in the plug bore and the stem bore,
the locking pin having a first end and a second end.
- 20 3. The valve trim assembly of claim 2, wherein the retaining
member substantially surrounds the first and second ends of the locking pin at
all operational positions of the valve plug.
4. The valve trim assembly of claim 1, wherein the retaining
member includes a cylindrical portion.

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5. The valve trim assembly of claim 1, wherein the retaining member comprises a cylindrically-shaped portion of a packing retainer.

6. The valve trim assembly of claim 5, wherein the packing
5 retainer is threadably attached to the bonnet.

7. The valve trim assembly of claim 1, wherein the plug is threadably attached to the movable valve stem.

8. A process control valve, comprising:
- a valve body having a fluid inlet passage, a fluid outlet passage, and an orifice disposed between the fluid inlet passage and the fluid outlet passage;
 - a bonnet attached to the valve body;
 - 5 a valve plug adapted to move to one of a plurality of operational positions with respect to the valve body, the valve plug including a plug bore;
 - a movable valve stem attached to the valve plug, the movable valve stem including a stem bore therein, the stem bore adapted to substantially align with the plug bore;
 - 10 a locking member disposed in the stem bore and the plug bore; and
 - a retaining member fixedly attached to the bonnet that substantially surrounds the locking member at all operational positions of the valve plug.
- 15 9. The process control valve of claim 8, wherein the locking member comprises a locking pin disposed in the plug bore and the stem bore, the locking pin having a first end and a second end.
- 20 10. The process control valve of claim 9, wherein the retaining member substantially surrounds the first and second ends of the locking pin at all operational positions of the valve plug.
- 25 11. The process control valve of claim 8, wherein the retaining member includes a cylindrical portion.

12. The process control valve of claim 8, wherein the retaining member comprises a cylindrically-shaped portion of a packing retainer.

13. The process control valve of claim 12, wherein the packing
5 retainer is threadably attached to the bonnet.

14. The process control valve of claim 8, wherein the plug is threadably attached to the movable valve stem.

15. A method of securing a valve plug to a valve stem in a process control valve that includes a valve body and a bonnet, the method comprising:

providing a stem bore in the valve stem;

providing a plug bore in the valve plug;

5 attaching the valve plug to the valve stem;

aligning the plug bore with the stem bore;

inserting a locking member into the aligned plug bore and stem bore;

and

preventing the locking member from extending outside of the aligned

10 plug bore and stem bore by attaching a retaining member to the bonnet, such that the retaining member substantially surrounds the locking member at all operational positions of the valve plug.

16. The method of claim 15, wherein the locking member is a
15 locking pin.

17. The method of claim 16, wherein the locking pin has a loose fit within the plug bore and the stem bore.

20 18. The method of claim 15, wherein attaching the valve plug to the valve stem comprises threadably attaching the valve plug to the valve stem.

19. The method of claim 15, wherein the retaining member
25 comprises a cylindrically-shaped portion of a packing retainer.

20. The method of claim 19, wherein the packing retainer is threadably attached to the bonnet.